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10/512,080	05/05/2005	Adolf Kuhnle	260235US0XPCT	2790

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ALEXANDRIA, VA 22314

EXAMINER
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MOORE, MARGARET G

ART UNIT	PAPER NUMBER
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1712

DATE MAILED: 12/21/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

10/512,080

Applicant(s)

KUHNLE ET AL.

Examiner

Margaret G. Moore

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 08 November 2004.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 30 to 38 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 30 to 38 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 11/8/04
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

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1. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

2. Claims 30 to 38 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 29 to 41 of copending Application No. 10/511,593. Although the conflicting claims are not identical, they are not patentably distinct from each other because the claims in '593 do not specifically state the particle size of the crosslinker, but the crosslinker and the nanofiller in instant claim 30 have the exact same chemical formula and as such the crosslinker in '593 will inherently meet the requirement of the nanofiller in the instant claims. As such the crosslinked matrix in '593 will inherently be the same as matrix containing a covalently bonded nanofiller as claimed. Note that claims 31 to 34 correspond to claims 33 to 39 in '593. The process claim 35 and method claim 38 corresponds to claim 39 in '593.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

3. Claims 30 to 38 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1 to 34 of copending Application No. 10/887,103. Although the conflicting claims are not identical, they are not patentably distinct from each other because, as noted above, the polyhedral compound in '103 will inherently meet the particle size requirement. The

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curable composition in '103 crosslinks to form a matrix in which the polyhedral compound therein is covalently bonded to a matrix. See particularly claim 34 which is drawn to the cured composition.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

4. Claims 30 to 38 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1 to 42 of copending Application No. 10/886,621. Although the conflicting claims are not identical, they are not patentably distinct from each other because, as noted above, the polyhedral compound in '621 will inherently meet the required particle size range. The composition in '621 will crosslink and the polyhedral compound therein will covalently attach to the binder, thereby forming a matrix within the breadth of the instant claims.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 30 to 35 and 38 are rejected under 35 U.S.C. 102(b) as being anticipated by Lichtenhan et al '053.

Lichtenhan et al. teach polymers containing alternating silsesquioxane and bridging groups. See for instance the POSS formula 1 on column 3, which meets the polyhedral oligomeric silicon-oxygen cluster units of the formula shown in claim 30. See also Example 1, in which the polyhedral compound is covalently bonded to a silicone polymer, which meets the claimed matrix material as well as the limitation of claim 33. The polymer prepared has an amount of polyhedral material meeting claim 34.

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Lichtenhan et al. do not specifically teach the particle size of the polyhedral compound used therein. However, for the two reasons noted below the claimed limitation that the polyhedral compound have a particle size of less than 20 nm will be inherently met by the teachings in Lichtenhan et al.

First, the POSS in Lichtenhan et al. has the same chemical formula as the claimed nanofiller. Products of identical chemical composition can not have mutually exclusive properties. A chemical composition and its properties are inseparable. Therefore, if the prior art teaches the identical chemical structure, the properties applicant discloses and/or claims are necessarily present. As such the size of the POSS compound in Lichtenhan et al. must be the same as that claimed.

On the other hand, note Lichtenhan et al. '919. Column 2, lines 43 to 48, teach that the POSS compounds in '053 are nanostructured and have a diameter of from .5 to 50 nm. See also Table 1. Also note Sammons et al., column 34, line 20, which states that T8 has a diameter of 1.5 nm (15 Angstroms). The Examiner relies upon the '919 and Sammons et al. references only to establish a property that is inherently found in '053.

Thus the Examiner has established that the teachings in '053, particularly the POSS compounds therein, inherently meet the requirements of the instant claims. Please see column 3, line 15 to 20, which meets claim 38.

7. Claims 30 to 35 and 38 are rejected under 35 U.S.C. 102(b) as being anticipated by Lichtenhan et al '867.

Lichtenhan et al. teach polymers and copolymers containing POSS units. See for instance the POSS formula 2 on column 6, which meets the polyhedral oligomeric silicon-oxygen cluster units of the formula shown in claim 30. This polyhedral compound is polymerized with an organic matrix to form a block or grafted copolymer as shown on column 4. Column 7, line 53, through column 8 details various methods of making a matrix in with the POSS compound of '867 is covalently bonded to a matrix. See Example 1, in which the polyhedral compound is covalently bonded to a silicone

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polymer, which meets the claimed matrix material as well as the limitation of claim 33. The polymer prepared has an amount of polyhedral material meeting claim 34.

Lichtenhan et al. do not specifically teach the particle size of the polyhedral compound used therein. However, for the two reasons noted below the claimed limitation that the polyhedral compound have a particle size of less than 20 nm will be inherently met by the teachings in Lichtenhan et al.

First, the POSS in Lichtenhan et al. has the same chemical formula as the claimed nanofiller. Products of identical chemical composition can not have mutually exclusive properties. A chemical composition and its properties are inseparable. Therefore, if the prior art teaches the identical chemical structure, the properties applicant discloses and/or claims are necessarily present. As such the size of the POSS compound in Lichtenhan et al. must be the same as that claimed.

On the other hand, note Lichtenhan et al. '919. Column 2, lines 43 to 48, teach that the POSS compounds in '053 are nanostructured and have a diameter of from .5 to 50 nm. See also Table 1. The Examiner relies upon the '919 reference only to establish a property that is inherently found in '867.

Thus the Examiner has established that the teachings in '867, particularly the POSS compounds therein, inherently meet the requirements of the instant claims. Please see column 9, line 17 and on, which meets claim 38.

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

9. Claims 30 to 38 are rejected under 35 U.S.C. 102(e) as being anticipated by Laine et al.

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This reference has a filing date of 5/6/02 which is prior to applicants' earliest priority date of 5/15/02.

Laine et al. teach nanosized components for organic/inorganic nanocomposites. Column 3, line 35, through column 4 teaches silsesquioxanes that meet the claimed polyhedral compound in claim 30. While column 3, line 37, teaches a particle size of less than 100 nm, column 8, line 16, specifically teaches that the nanocomponents therein have an overall size of less than 5 nm. This meets the claimed particle size requirement. As can be seen from, for instance, Fig. 12 or Fig. 14, the silsesquioxanes react with an organic matrix to form the final composite. This anticipates instant claims 30 to 33. Example 12 teaches a method in which the silsesquioxane is in a solvent prior to mixture with the organic matrix component (meeting claim 37) while Example 23 shows melt processing (meeting claim 36). The amounts in these examples meet claim 34.


10. Numerous references are cited as being of general interest. Many of these teach POSS compounds covalently bonded to an organic matrix, but are not believed to be any closer to the instant claims than the prior art references noted above. See for instance Zank et al., Weidner et al. and Jia. Some references have an effective filing date later than applicants' earliest priority date. See for instance Svejda et al. or Lichtenhan et al. '345. While applicants have not filed a certified English translation of the priority papers, these references also are not believed to be any closer to the claims than the prior art cited above. Thus the Examiner has opted not to make a 102(e) rejection over these references. Lichtenhan et al. '919 teach blending POSS with a polymer but do not specifically teach any covalent bonds.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Margaret G. Moore whose telephone number is 571-272-1090. The examiner can normally be reached on Monday to Wednesday and Friday, 10am to 4pm.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Randy Gulakowski can be reached on (571) 272-1302. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Margaret G. Moore  
Primary Examiner  
Art Unit 1712

mgm  
12/16/05